

REMARKS

Status of the Claims

Claims 1-20 are pending. Applicants affirm the election with traverse, made on November 8, 2001, to prosecute claims 1-8 and 16-20. Accordingly, applicants acknowledge that claims 9-15 are currently withdrawn from consideration.

Claim 1 has been amended to incorporate limitations from claim 2, in particular reciting that "an unpreground as-granulated or as-pelletized particulate slag" is added to the aggregates. Support for this amendment can be found in originally filed claims 1 and 2. Claims 2, 16-17, and 20 have been cancelled.

Information Disclosure Statement

Applicants acknowledge that the information disclosure statements of March 27, 2000 and June 15, 2000 recite the same references. Applicants further acknowledge that the Examiner indicated that he has considered the references recited on the March 27, 2000 information disclosure statement.

Abstract

The Office has noted that "[t]he abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words." Office Action, page 3. The Office has further noted that "[t]he language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, 'The disclosure concerns,' 'The disclosure defined by this invention,' 'The disclosure describes,' etc." *Id.* Finally, the Office noted that "[i]n the instant case, the abstract is two paragraphs and contains phrases that can be implied (e.g., the invention relates to). The abstract should be amended in response to this Office action to correct these deficiencies." *Id.*, page 4.

In response to the Office's comments, Applicants have amended the abstract to one paragraph and have further deleted the phrase "the invention relates to."

Arrangement of the Specification

Applicants have amended the specification to add section headings, as suggested by the Examiner.

Rejections Under 35 U.S.C. § 103

The Office has rejected claims 1, 2, 4, 8 and 17 over U.S. Patent No. 3,230,103 to Minnick in view of U.S. Patent No. 3,398,662 to Takata et al. ("Takata"). According to the Office, "Minnick teaches a method of forming a road base . . . including forming an admixture . . . of lime . . ., finely divided blast furnace slag . . ., and fly ash and combining the admixture . . . and coarse particles of blast furnace slag . . . with inert aggregate in the presence of water to form a composition for a road base or base layer. . . . Minnick further teaches that the blast furnace slag for the admixture is converted to a useful form by grinding or pulverizing to extremely fine particles where at least about 70% by weight of which passes through a standard 325 mesh screen (dry ground vitrified slag having a particle size of less than 500 μ m)" Office Action, pages 5-6.

While the Office acknowledges that "Minnick does not specifically teach how the road base or base layer is formed using the composition," the Office alleges that Takata teaches "a soil-cement stabilization process to build a base course for a roadway including shaping, crowning and grading the existing ground surface; spreading a layer of Portland cement over the entire area to be stabilized; mixing cement, soil and water with suitable ground penetrating equipment; compacting the area; allowing the cement to harden as it hydrates" *Id.*, page 6. The Office then concludes that "[i]t would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the process of forming a base course of a roadway taught by Takata et al. as the method for forming the road base or base layer in the process of Minnick to provide a reliable and cost-effective method of forming the road base or base layer in the process of Minnick." *Id.*

Applicants submit that amended claim 1 is not rendered prima facie obvious in view of the references cited by the Office. Applicants' claim 1 is directed to a:

Process for constructing infrastructures, in which [1] aggregates, [2] vitrified blast-furnace slag, a [3] pulverulent activator and [4] water are [A] mixed together, and [B] the mix is spread out over the ground, compacted and left to harden, characterized in that

[i] **an unpreground as-granulated or as-pelletized particulate slag** and

[ii] **a ready-prepared additive** containing, on the one hand, the activator and, on the other hand, **dry ground vitrified slag having a particle size of less than 500 μm**

are added to the aggregates.

(emphasis added). Hence, amended claim 1 recites that vitrified slag is predominately **unpreground as-granulated or as-pelletized particulate slag** and that vitrified slag having a particle size of less than 500 μm is added as an **additive** only, meaning that vitrified slag having a particle size of less than 500 μm makes up a **small minority** of the total slag (see, for example, the specification, page 5, lines 4-5, noting that “[t]he vitrified blast-furnace slag, which is added to the aggregates is in the unpreground particulate state, may, according to the invention, be an as-granulated slag, which generally contains at most approximately 1% fines, or an as-pelletized slag, which contains substantially no fines.”).

In contrast to Applicants’ invention, Minnick discloses **only the use of finely divided blast-furnace slag** (see, Minnick, col. 2, line 62 to col. 3, line 12). According to Minnick:

In blast furnace slag which is ideally suited for use in accordance with this invention, the material is converted by **grinding or pulverizing to extremely fine particles, at least about 70% by weight of which passes through a standard 325 mesh screen**

Minnick, col. 3, lines 5-9 (emphasis added). Thus, the reference teaches that the entire slag composition is ground or pulverized to “extremely fine particles”, at least about 70% of which passes through a standard 325 mesh screen, meaning that at least 70% has a particle size of less than about 45 μm . Applicants’ invention, in contrast claims vitrified

slag having a particle size of less than 500 μm only as an additive, making up only a small minority of the total slag (preferably 1% or less).

In addition to requiring only the use of finely divided blast furnace slag, Minnick requires the presence of fly ash in his disclosed compositions. Indeed, Minnick not only emphasizes that fly ash is a critical component of his invention but also states that this component makes up at least 50% of his disclosed compositions prior to being combined with inert aggregate. In this regard Minnick notes:

The properties of ingredients in accordance with this invention are critical. In actual practice the optimum properties have been found to be 10-50% by weight lime plus slag and 50-90% by weight fly ash. In accordance with this invention, from about 20% to about 80% by weight of the lime must be replaced by finely divided blast furnace slag.

Id., col. 3, lines 38-44 (emphasis added).

Accordingly, in order to modify Minnick in order to obtain a road base composition useful in Applicants' claimed invention, one of ordinary skill in the art would at least be required to: (1) use finely divided blast furnace slag as an additive, making up only a small minority of the total slag, rather than the only slag component, and (2) eliminate using at least 50% fly ash in the composition prior to being combined with aggregate. Nothing in Minnick teaches or suggests making either of these modifications nor are either of these modifications taught or suggested in Takata. Accordingly, for these reasons alone, Applicants submit that claim 1 is not obvious over Minnick in view of Takata.

In addition, as the Office has acknowledged, "Minnick does not specifically teach how the road base layer is formed using the composition. . . ." Office Action, page 6. In this regard, the Office alleges that Takata overcomes this deficiency in Minnick by teaching "a soil-cement stabilization process to build a base course for a roadway" including the steps of first, shaping the roadway (Takata, col. 1, line 49), second, spreading of Portland cement (*id.*, col. 1, lines 53-54), third, mixing Portland cement, soil

and water (*id.*, col. 1, lines 54-56), and then compacting (*id.*, col. 1, line 56) and hardening (*id.*, col. 1, line 57).

Applicants submit that the teachings of Takata would not motivate one of ordinary skill in the art to further modify Minnick so as to obtain Applicants' claimed invention. In contrast to Takata, amended claim 1 recites that "aggregates, vitrified blast-furnace slag, a pulverulent activator and water" are first mixed together. Following this mixing with water, the resultant mix is then "spread out over the ground, compacted and left to harden." Thus, claim 1 recites that aggregates, slag, activator, and water are **mixed together first, before spreading** out over the ground. Takata, in contrast, teaches the **spreading of Portland cement occurs before the mixing with water** and soil. Thus, in addition to teaching the use of entirely different ingredients, Takata teaches mixing these ingredients in an entirely different manner than as claimed by Applicants. Specifically, Takata teaches spreading ingredients on the ground **prior** to mixing with water rather than spreading **after** mixing, as claimed by Applicants. Nothing in Takata teaches or suggests making a road base in any other fashion, and thus, for this additional reason, applicants respectfully request that the rejection of amended claim 1 under 35 U.S.C. § 103 over Minnick in view Takata be withdrawn. Applicants further request that the rejection of claims 3-8 and 18-19 also be withdrawn, since these claims are either directly or indirectly dependent on amended claim 1.

Conclusion

In view of the foregoing, withdrawal of the rejections and allowance of the current pending claims is respectfully requested. If the Examiner feels that the pending claims could be allowed with minor changes, the Examiner is invited to telephone the undersigned to discuss an Examiner's Amendment.

Applicants believe no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 22-0185, under Order No. 21482-00057-US from which the undersigned is authorized to draw.

If any extensions or fees are not accounted for, such extension is requested and the associated fee should be charged to our deposit account.

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Respectfully submitted,

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